Proposed Regulation of Mercury-Containing Waste

Department of Toxic Substances Control
Public Workshop

November 19, 2001

Proposed Regulation of Mercury-Containing Wastes

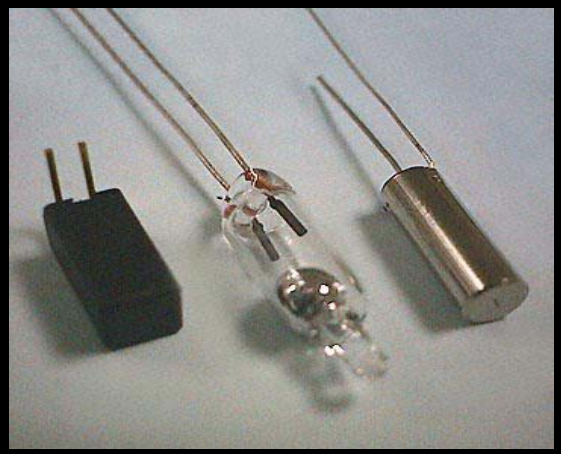
- ***Purpose***
  - to promote pollution prevention, recycling and mercury alternatives by redefining mercury hazardous waste criteria
    - will provide safeguards from additional mercury environmental loading and protect public health and environment

Proposed Regulation of Mercury-Containing Wastes

- ***Public Workshops***
  - to create a dialog with interested parties on our options for the proposed mercury-containing waste
  - four workshops scheduled statewide
  - gather additional information and data

Proposed Regulation of Mercury-Containing Wastes

- ***Mercury***
  - persistent and bioaccumulative
  - uses
    - measurement devices, switches, thermostats
    - biocides, bactericides fungicides insecticides
    - some pharmaceutical products
    - industrial
    - amalgams
    - batteries



Proposed Regulation of Mercury-Containing Wastes

- ***Mercury - State and National***
  - Water Quality Criteria (TMDLs)
  - Toxic Air Contaminant
  - Fish Consumption Advisories
  - Mercury Product Restrictions/Bans

Proposed Regulation of Mercury-Containing Wastes

- ***Hazardous Waste Criteria Background***
  - 1977: guidelines initially drafted
  - 1978: California Assessment Manual (CAM)
  - 1982: public workshops initiated
  - 1984: regulations were finalized

Proposed Regulation of Mercury-Containing Wastes

- ***Mercury and Hazardous Waste Management***
  - today: change mercury hazardous waste identification criteria to promote pollution prevention, recycling, and mercury alternatives

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- ***Draft Mercury Report - provides overview***
  - mercury in the environment - land, air, water
  - standards for the environmental important forms of mercury
  - environmental and public health issues
  - mercury chemistry and toxicology

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- ***Draft Mercury Report - provides overview***
  - the global mercury cycle
  - sources of mercury in the environment
  - mercury uses and alternatives
  - assessment of the waste contribution to mercury in the environment
  - options to control waste sources of mercury

Proposed Regulation of Mercury-Containing Wastes

- ***CA Mercury Hazardous Waste Criteria (nonRCRA)***
  - Soluble Threshold Limit Concentration
    - STLC
    - Waste Extraction Test (WET)
    - 0.2 milligrams per liter
  - Total Threshold Limit Concentration
    - TTLC
    - 20 milligrams per kilogram

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- ***Federal Mercury Hazardous Waste Criteria (RCRA)***
  - Characteristic
    - Toxicity Characteristic Leaching Procedure (TCLP)
    - 0.2 milligrams per liter
  - Listed
    - commercial chemical products (U151)
    - industrial process waste (waste from mercury cell processes in chlorine production K071, K106)

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- ***Hazardous Waste Management***
  - "Cradle to grave"
  - "Full" hazardous waste management
  - Universal waste management
    - alternative management standards
    - typically allows "relaxed" requirements for storage, collection and transportation

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- ***Waste Disposal***
  - direct land contamination
  - potential to leak and leach mercury
  - mercury in landfill gases
    - recent study in Florida detected mercury compounds in landfill gas
    - suggests that landfill gas may be a larger emission source than previously believed

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- ***Waste Disposal***
- Hazardous waste disposal (Class I)
  - leachate collection system
  - no landfill gases generated - no volatiles or putrescible waste accepted

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- ***Waste Disposal***
- Nonhazardous waste disposal (Class III)
  - new Class III landfill criteria requires base liners and leachate collection systems
  - Solid Waste Assessment Test Report
    - 72-86% leaking outside landfill limits - none over beneficial use criteria

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- ***Waste Disposal***
  - landfill gases
    - 1993: requirement to collect landfill gas in wells to flare or burn for energy recovery
    - about half of the 275 Class III landfills have landfill gas collection systems

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- ***Mercury Flow Trends***
  - estimated 3 fold increase due to human activities
  - no new mercury from mining sources; from secondary sources (recycling)

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- ***Mercury Waste Disposal Trends***
  - Declining
  - due to bans in mercury use in consumer products (paints, batteries) and manufacturer source reduction
  - still more is deposited on land than emitted in the air

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- ***Mercury Waste-Derived Air Emissions***
  - 1.51 tons in 2000
  - includes waste burning, fluorescent tube breakage, incinerators, sewage treatment, cogeneration plants, landfills, etc.

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- ***Mercury Waste-Derived Water Sources***
  - 1180 pounds of dental amalgam entering POTWs in 2000 (Mercury Headworks Analysis for 2000)
    - 90% efficient removal at POTWs
    - 118 pounds enter CA waters

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- ***Mercury Waste-Derived Water Sources***
  - 22 to 286 pounds from fluorescent light tube breakage in landfills deposited in SF Bay through air emissions (Region 2 RWQCB)
  - legacy waste

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- ***Mercury Waste Land Disposal***
  - 2000: National projected estimate (USEPA)
    - 172.7 tons
  - 2000: California projected estimate
    - 20.7 tons
  - Includes batteries, lighting, paint, thermometers, thermostats, dental, switches, special paper coatings

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- ***Mercury Waste Land Disposal -CA***
  - Mercury projection from fluorescent lamps
    - 2001: 1.32 tons (NEMA)
    - 2000: 4.9 tons (USEPA)

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- ***Mercury Waste Land Disposal -CA***
  - Mercury projection from dental
    - 2000: 2.2 tons amalgam generated for disposal or recycling (Mercury Headworks Analysis for 2000)
      - does not include amalgam entering POTWs
    - 2000: 0.3 tons disposed in CA landfills (USEPA)

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- ***Mercury Waste Land Disposal - CA***
  Auto Shredder Waste
  - DTSC Auto Shredder Initiative 2001
  - 700,000 automobiles are shredded in CA
  - 2 mercury switches containing 0.5 to 1 gram of mercury
  - potentially 0.75 to 1.5 tons of mercury in auto shredder waste

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- ***Mercury Waste Land Disposal - CA***
  Auto Shredder Waste
  - 300,000 tons of auto shredder waste
  - does not exceed mercury STLC/TTLC
  - analytical testing shows that 0.93 tons of mercury in auto shredder waste
  - 47% of feedstock are autos
  - 0.4 tons of mercury from autos in auto shredder waste

Proposed Regulation of Mercury-Containing Wastes

- ***Conclusion***
  - fish consumption advisories exist for CA waters
  - there are many state and national efforts to reduce, control, and eliminate mercury in the environment
  - additional mercury-containing waste entering the environment can be avoided

Proposed Regulation of Mercury-Containing Wastes

- ***Recommendation***
- Promote pollution prevention, use of mercury alternatives and recycling by redefining mercury hazardous waste criteria
  - will provide safeguards from additional mercury environmental loading and protect public health and environment

Proposed Regulation of Mercury-Containing Wastes

- ***Report Recommendations***

- "List" all mercury-containing waste
- Use of universal waste management standards where applicable
- Class I disposal
- Phased implementation

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- ***Hazardous waste identification options contemplated***
  - "listing" mercury containing waste as hazardous waste
    - all
    - intentionally added
    - discarded consumer products with STLC/TTLC
  - develop a new number
  - status quo

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- ***Hazardous waste management options***
  - full hazardous waste management
  - universal waste management
  - phased implementation
  - hazardous waste landfill disposal (Class I)
  - nonhazardous and/or hazardous waste landfill disposal (Class I, II, III)

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Potential Waste Affected

- automobiles and appliances
- auto shredder waste
- "nonhazardous" fluorescent lamps
- toys, games, novelty items
- mercury-painted debris
- ash
- sewage sludge
- contaminated soil
- non excluded mining
- mercury-containing measuring devices

Proposed Regulation of Mercury-Containing Wastes

- Hazardous Waste Identification Options
  - all
  - intentionally added
  - discarded consumer products with STLC/TTLC
  - develop a new number
- Hazardous Waste Management Options
  - full hazardous waste management
  - UW management
  - phased implementation
  - Class I Disposal
  - Class I, II, III Disposal

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- Example #1: Regulate all mercury-containing waste as hazardous waste
  - could recognize existing exclusions and exemptions (ex. mining, industrial waste waters under CWA)
  - would include any detectable amount of mercury in waste, naturally occurring or intentionally added
  - Class I disposal

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- Example #1: Regulate all mercury-containing waste as hazardous waste
  - Universal waste management standards for consumer products (toys, games, lights, etc.)
    - facilitate collection and recycling
    - flexible (performance standards)
    - waste stream specific (prescriptive standards)

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- Example #1: Regulate All Mercury-Containing Waste
  - Phased implementation
    - those wastes where recycling technologies are not available (soils, sludges, ash)
    - allow time for switch from mercury to nonmercury-containing products
    - allow time to develop infrastructure to facilitate collection, storage, recycling

Proposed Regulation of Mercury-Containing Wastes

- Example #1: Regulation of All Mercury-Containing Waste
  - Alternative Disposal: use STLC/TTLC to determine disposal options (ex. soils, ash, sludges)
  - Class I, II, or III

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- Example #1: Regulation of All Mercury-Containing Waste
  - Disposal at Class I, II or III landfill
    - must be lined with leachate collection system
    - current STLC and TTLC would determine Class I landfill disposal
    - wastes not exceeding STLC or TTLC would have option to dispose at Class I, II or III

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- Example #2: Regulate all intentionally added mercury-containing waste
  - would not include naturally occurring mercury in soils, ashes, sludges
  - presumes knowledge on generator whether mercury in the waste originates from naturally occurring sources
  - other options similar to Example #1

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- Example #3: Regulate All Mercury-Containing Consumer Products When Discarded
  - toys, games, devices using mercury switches or components (cars, barometers, manometers, appliances)
  - all nonconsumer products discards compared to STLC/TTLC (soils, ash, etc.)

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- Example #3: Regulate All Mercury-Containing Consumer Products When Discarded
  - universal waste management standards
  - phased implementation
    - consumers vs. industry
    - time to switch from mercury to nonmercury products
    - time to develop infrastructure

Proposed Regulation of Mercury-Containing Wastes

- ***Data and Information Needed***
  - volumes generated
  - waste types impacted
  - concentrations of mercury in products and waste
  - capacity to treat and dispose
  - impact of options contemplated
  - your ideas on how to change the threshold